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THE

ONTARIO WATER RESOURCES

COMMISSION

WATER POLLUTION SURVEY

TOWN OF RENFREW

COUNTY OF RENFREW

1964

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TOWN OF RENFREW 1964  
COUNTY OF RENFREW

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Report on water pollution  
survey of the town of Renfrew in  
the county of Renfrew.

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THE  
ONTARIO WATER RESOURCES  
COMMISSION

Report  
on  
WATER POLLUTION SURVEY  
of the

TOWN OF RENFREW

in the

COUNTY OF RENFREW

Division of Sanitary Engineering  
September and November

1 9 6 4

Report on  
Water Pollution Survey  
of the  
TOWN OF RENFREW

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## WATER POLLUTION SURVEY

### TOWN OF RENFREW

#### INTRODUCTION

A water pollution survey of the Town of Renfrew was performed by Commission staff on September 10 and November 18, 1964. Surveys of this type are made by the Division of Sanitary Engineering, Ontario Water Resources Commission, in order to locate active and potential sources of surface water pollution. Recommendations are made concerning the abatement of conditions which adversely affect water quality.

Although the sampling of surface waters and discharges thereto was performed on September 10, the absence of municipal officials at that time made it necessary to renew attempts to contact these persons on the latter date.

#### INTERVIEWS WITH OFFICIALS

Discussions were held with the following officials during this survey:

Town of Renfrew: Mr. D. S. Fraser, Town Engineer;  
Mr. D. Cochlin, Assistant Town Engineer.

Renfrew County Health Unit: Mr. J. Watt, Chief Public  
Health Inspector.

Several unsuccessful attempts were made to contact Mr. F. W. Hunter, Clerk-Treasurer, Town of Renfrew.

#### TOWN OF RENFREW

The Town of Renfrew is located in the County of Renfrew at the junction of Highway 132 and Highway 17. The Bonnechere River flows through Renfrew and empties into the Ottawa River approximately

eight miles downstream from the town.

According to the 1964 Municipal Directory, the population of Renfrew is approximately 8,485. The area of the town is approximately 2,416 acres.

Renfrew has developed progressively with an economy based on lumbering, agriculture, and industry. The increase in residential development normally associated with such growth has resulted in the need for the expansion of municipal services.

In this report, the word "Renfrew", when used without qualification, refers to the Town of Renfrew.

#### THE BONNECHERE RIVER AT RENFREW

##### General

Since the Bonnechere River flows through the heart of Renfrew, various aspects of this watercourse are of vital concern in future planning for the town.

Two tributaries empty into the Bonnechere River in Renfrew and are Smith's Creek and a small watercourse which flows from the vicinity of Fraser Street. The river pursues a somewhat circuitous course through Renfrew and is bordered by steep banks in some areas.

##### Hydrology

Hydrologic data pertaining to the Bonnechere River in the vicinity of Renfrew have been obtained from the hydrometric station which is located near Castleford downstream from Renfrew. The following information has been supplied by the Department of Northern Affairs and National Resources:

<u>Climatic Year</u>	<u>Mean Flow (in cfs)</u>	<u>Date</u>	<u>Maximum Flow (in cfs)</u>	<u>Date</u>	<u>Minimum Flow (in cfs)</u>
1953-1954	642	April 17	3,700	Nov. 22	73
1954-1955	935	April 5	5,120	Sept. 25	85
1955-1956	671	April 5	4,390	Feb. 6	58
1956-1957	397	March 14	1,440	Jan. 1	143
1957-1958	615	April 17	2,420	Aug. 10	110
1958-1959	444	April 12	1,860	Sept. 27	26
1959-1960	590	May 1 & 2	3,170	Aug. 27	24
1960-1961	331	June 1	940	Oct. 10	26

## WATER USES

### Municipal

The Bonnechere River is the source of the municipal water supply at Renfrew, and receives the untreated sewage flows and most of the surface drainage flows which originate within the town. It is likely that the river will receive the effluent from future municipal sewage works in Renfrew.

The watercourse is utilized within the town for the generating of electricity.

### Industrial

The Bonnechere River receives industrial waste flows from Renfrew. Most of the flows gain access to the watercourse via the municipal sewer systems.

### Recreational

The river is used for bathing purposes upstream from the Highway 17 bridge in Renfrew.

## WATER SUPPLY

Renfrew's municipal water supply is obtained from the Bonnechere River. The water flows by gravity through a 16-inch diameter cast iron intake pipe to the low lift pumping station.

Reportedly, the bell mouth of the intake is covered by 16 feet of water at high water level and 11 feet of water at low water level.

The treatment works have a reported capacity of 2.0 million gallons per day and include a low lift pumping station, chemical feeders, a flash mixer, two flocculators, a circular clarifier, two rapid sand filters, chlorination equipment, fluoridation equipment, and high lift pumps. Alum, carbon, and lime are used in the chemical treatment process. Storage for the system is provided by a 155,000-gallon standpipe and a 500,000-gallon reinforced concrete underground reservoir, the latter unit being located adjacent to the water purification plant.

Information pertinent to water pumpage during the month of October, 1964, is reported as follows:

Total pumpage for month	- 31,410,000 gallons
Maximum daily pumpage (Oct. 15)	- 1,132,000 gallons
Minimum daily pumpage (Oct. 11)	- 869,000 gallons
Average daily pumpage	- 1,013,225 gallons
Per capita daily water use	- 119 gallons

Renfrew's water works system is operated under the jurisdiction of the town council.

#### SURFACE WATER DRAINAGE

Most of the surface drainage flows are conducted by the municipal sewer systems either to the Bonnechere River or to its tributaries within the town. Although Renfrew is served by storm sewers, sanitary sewers, and combined sewers, an active programme of constructing separate storm sewers has been adopted. Reportedly, only storm sewers terminate on the banks of Smith's Creek. Such a programme is commendable and, if effectively pursued, can reduce to an appreciable extent the volume of waste water which would require treatment.

## SEWAGE DISPOSAL

Systems of sanitary and combined sewers conduct sanitary wastes and most of the industrial wastes to the Bonnechere River. Four combined sewer outfalls and one sanitary sewer outfall were disclosed during this survey.

## PROPOSED SEWAGE TREATMENT FACILITIES

Although officials of the Town of Renfrew have given some consideration to the initiation of an active sewage works construction programme, a positive commitment has not been made in this respect. The services of a firm of consulting engineers were obtained several years ago for the preparation of a preliminary engineering report on sewage works. The proposed works would include interceptor sewers and a primary-type sewage treatment plant so designed that secondary treatment facilities could be provided in the future. The effluent from the sewage treatment plant would be discharged to the Bonnechere River.

## INDUSTRY

The principal industrial firms located in Renfrew are listed as follows:

<u>Name of Firm</u>	<u>Product</u>
Amphenol	Covered wire
Bert Beattie Furniture	Unpainted furniture
Blue Bell of Canada Limited	Sportswear
Centreside-Douglas Dairy Limited	Dairy products
Diecraft Limited	Jigs, tools, moulding
J. L. Forgie and Sons	Concrete blocks
H. Imbleau and Son Limited	Castings and machine works
Magline of Canada Limited	Magnesium alloy products
Maple Leaf Dairy	Dairy Products
Polyfiber Limited	Reinforced plastics
Renfrew Aircraft and Engineering Company Limited	Engine components, machine works
Renfrew Bottling Works	Carbonated drinks
United Dairy and Poultry Co-Op Ltd.	Dairy and poultry products
Upper Ottawa Co-Op Poultry Products	Poultry processing

<u>Name of Firm</u>	<u>Product</u>
R.C.A. Victor	Radio and T.V.
Stevens Controls Limited	Bimetallic thermostats
Stewart Hartshorn Limited	Window blinds, etc.
Textiles Limited	Textiles
Wood Works of Renfrew Limited	Wood products

According to the information obtained during this survey, the only industrial premises where all flows are not discharged to the municipal sewers is the Renfrew Aircraft and Engineering Company Limited. Although sanitary wastes are discharged from this plant to the municipal sewers, at least a portion of the industrial waste flows are discharged to the small watercourse which flows in a gully between Fraser Street and McLean Street and empties into the Bonnechere River at sample point number BOF 8.4.

The larger industrial plants in Renfrew have been inspected in the past by members of the Industrial Wastes Branch of this Commission.

#### SAMPLING PROCEDURES

Samples were collected from the waters of the Bonnechere River and its tributaries in Renfrew, and from most of the outfalls to the watercourse within the town. Some outfalls were not sampled due to relative inaccessibility. Appended to this report is a map of Renfrew showing the locations of sample points. The pertinent laboratory results are appended to this report in Tables I to III, inclusive.

#### INTERPRETATION AND SIGNIFICANCE OF LABORATORY RESULTS

The analyses employed to determine the quality of samples were: biochemical oxygen demand (BOD), solids, tests for specific chemicals, and the enumeration of coliform organisms.

The BOD of sewage, industrial wastes, or polluted waters,

is the oxygen required during stabilization of the decomposable organic or chemical material by aerobic biochemical action. A five-day BOD determination with incubation at 20 degrees Centigrade is reported. A high BOD is indicative of organic or chemical pollution. The BOD of a watercourse should not exceed four parts per million (ppm).

The analyses for solids include tests for total, suspended, and dissolved solids. The results are reported in ppm. The first test measures both the solids in solution and in suspension. The suspended solids indicate the measure of undissolved solids of organic or inorganic nature in suspension. Land erosion, sewage, and industrial wastes, are significant sources of suspended solids. The dissolved solids are a measure of those solids in solution.

Specific laboratory tests were performed, in some instances, to determine the influence of industrial waste flows on surface water quality.

The coliform count is employed to obtain an enumeration of coliform organisms. The presence of coliforms indicates pollution by human or animal excrement, or by some non-faecal forms. The number of coliforms is reported per 100 millilitres (ml) of the sample. The membrane filter technique was used in the examination of these samples. It is the opinion of the OWRC that the presence of coliforms in a watercourse should not exceed 2,400 organisms per 100 ml of water.

#### SAMPLE RESULTS

The laboratory results of analyses and examinations performed on the samples collected are tabulated in appendices to this report as follows:

Table I - Bonnechere River and its tributaries in Renfrew

Table II - Municipal sanitary and combined sewer outfalls

Table III - Municipal storm sewer outfalls

Bonnechere River and its tributaries in Renfrew

The coliform ~~content~~ of the Bonnechere River water increased excessively as the watercourse flowed through Renfrew. The adverse influence exerted by untreated sewage discharges on the quality of the river water in Renfrew was thus revealed.

No appreciable effect on the water quality of Smith's Creek was revealed within the town. The high coliform content revealed in the creek water at the upstream limit of Renfrew (sample point number BOS.11.9) is attributed to run-off from agricultural land.

The samples pertaining to the creek flowing to the Bonnechere River from the vicinity of Fraser Street were collected in an attempt to assess the influence of industrial waste flows discharged to this watercourse from the Renfrew Aircraft and Engineering Company Limited plant upstream from Hall Avenue. The section of the creek receiving these waste waters is tiled past the aforementioned plant and it was not readily possible to sample the plant effluent. Reportedly, the flows from this plant constituted the entire flow in the creek at Hall Avenue during this survey. The samples obtained from the stream at Hall Avenue (sample point number BOF. 9.05) contained a high coliform content but the chemical content was not appreciably high. The laboratory results pertaining to the samples collected from this creek at its mouth (sample point number BOF. 8.4) indicated satisfactory conditions with respect to water quality. In a report prepared several years ago by members of the Industrial Wastes Branch of this Commission, it

was recommended that the contaminated flows from the Renfrew Aircraft and Engineering Company Limited plant should be discharged to the municipal sanitary sewer system upon completion of the proposed sewage treatment plant.

#### Municipal Sanitary and Combined Sewer Outfalls

Although there are combined sewers discharging to the Bonnechere River at sample points B0. 9.25 C and B0. 9.11 C, as shown on the appended map, the pertinent flows were not readily accessible for sampling during this survey. A similar condition was encountered at sample point number B0. 9.35 S where a sanitary sewer has its outfall on the east bank of the Bonnechere River at Raglan Street.

The presence of untreated sewage was indicated in the samples collected from the following two combined sewer outfalls to the river:

Sample Point B0. 9.48 C is located where a combined sewer has its outfall on the west bank of the Bonnechere River at Bridge Street.

Sample Point B0. 8.61 C is located where sewage flows discharge on the east bank of the Bonnechere River opposite Francis Street.

#### Municipal Storm Sewer Outfalls

Investigations revealed on September 10, 1964, that many of the storm sewer outlets in Renfrew were devoid of flow. The absence of discharges from storm sewers during a period when precipitation was not occurring indicates that the storm sewer systems connected to these outlets are utilized only for the draining of surface run-off flows to watercourses. However, there were

several instances where storm sewer discharges were conducting contaminants to watercourses at the following locations:

Sample Point BOS. 9.96 W is located where a storm sewer discharges toward Smith's Creek near the foot of Carswell Street.

Sample Point BOS. 10.49 W is the storm sewer outfall located on the north bank of Smith's Creek at the foot of Prince Avenue.

Sample Point BOS. 11.08 W is the storm sewer outfall located on the north bank of Smith's Creek at Raglan Street.

Sample Point BOSX. 11.20 W is the storm sewer outfall discharging to a tributary of Smith's Creek near Coleraine Drive.

Sample Point BO. 9.48 W is the storm sewer outfall located on the west bank of the Bonnechere River at Bridge Street. The laboratory results suggest that this is a combined sewer.

The excessive coliform contents revealed in the above municipal storm sewer discharges indicate the presence of untreated or inadequately treated sewage.

#### SUMMARY

A water pollution survey of the Town of Renfrew was performed by Commission staff during the months of September and November, 1964. Sampling of watercourses and discharges thereto within the town was conducted on September 10. Additional information was obtained on November 18. The purpose of this survey was to determine if surface water pollution occurs to an appreciable extent.

The untreated sanitary and industrial waste flows are discharged through one sanitary sewer outfall and four combined sewer outfalls. The laboratory results indicate the presence of sewage in four storm sewers discharging to Smith's Creek and in one storm sewer discharging to the Bonnechere River. Some sewers were not readily accessible for sampling. The coliform content of the river water increases excessively as the watercourse flows through the town.

Renfrew does not have municipal sewage treatment facilities. Although the construction of such works has been considered by local officials, it is apparent that a definite commitment has not been made in this regard.

RECOMMENDATIONS

Officials of the Town of Renfrew should proceed with the construction of sewage works in order to abate pollution of the Bonnechere River within the municipality. When such works have been constructed, all sewage flows presently gaining access to water-courses should be discharged to the sewage treatment facilities.

All of which is respectfully submitted,

District Engineer:

  
J. K. Theil

Approved by:

K. H. Sharpe, Director

TABLE 1

ALL ANALYSES EXCEPT PH REPORTED IN  
PPM UNLESS OTHERWISE INDICATED

BONNECHERE RIVER AND ITS TRIBUTARIES IN RENFREW

DATE SAMPLED: SEPT. 10/64

SAMPLE POINT No.	SOURCE	5-DAY BOD	S O L I D S			PH AT LAB.	ALKALINITY CaCO <sub>3</sub>	IRON AS FE	BACTERIOLOGICAL EXAMINATION
			TOTAL	SUSP.	DISS.				M.F. COLIFORM/100 ML
BO. 10.1 A	BONNECHERE RIVER AT C.P.R. BRIDGE UPSTREAM FROM RENFREW - SOUTH SIDE	1.1	94	1	93	--	--	--	150
BO. 10.1 B	BONNECHERE RIVER AT C.P.R. BRIDGE UPSTREAM FROM RENFREW - NORTH SIDE	1.2	100	1	99	--	--	--	50
BOS. 9.6	SMITH'S CREEK AT ITS CONFLUENCE WITH BONNECHERE RIVER	1.3	130	1	129	--	--	--	490
BOS. 11.9	SMITH'S CREEK AT UPSTREAM LIMIT OF RENFREW	1.2	302	68	234	--	--	--	2,700
BO. 9.35	BONNECHERE RIVER AT RAGLAN STREET FOOTBRIDGE	1.1	84	5	79	--	--	--	41,000
BOF. 8.4	TRIBUTARY FLOWING FROM VICINITY OF FRASER STREET - AT MOUTH	0.6	186	2	184	7.9	82	0.69	630
BOF. 9.05	AFOREMENTIONED TRIBUTARY AT NORTH SIDE OF HALL AVE.	0.9	144	25	119	7.1	60	1.44	15,000
BOF. 9.47	AFOREMENTIONED TRIBUTARY AT COUMBES AVE. (HWY. 17)					N O F L O W			
BO. 8.3	BONNECHERE RIVER NEAR DOWNSTREAM LIMIT OF RENFREW	0.5	98	11	87	--	--	--	144,000

TABLE 11

ALL ANALYSES EXCEPT PH REPORTED IN  
PPM UNLESS OTHERWISE INDICATED

MUNICIPAL SANITARY AND COMBINED SEWER OUTFALLS

DATE SAMPLED: SEPT. 10/64

SAMPLE POINT NO.	SOURCE	5-DAY	S O L I D S			BACTERIOLOGICAL EXAMINATION
		BOD	TOTAL	SUSP.	DISS.	M.F. COLIFORMS PER 100 ML
BO. 9.48 C	COMBINED SEWER OUTFALL ON WEST BANK OF BONNECHERE RIVER AT BRIDGE STREET.	165.	468	74	394	134,000,000
BO. 9.35 S	SANITARY SEWER OUTFALL ON EAST BANK OF RIVER AT RAGLAN STREET NORTH	(NOT READILY ACCESSIBLE FOR SAMPLING)				
BO. 9.25 C	COMBINED SEWER OUTFALL ON WEST BANK OF RIVER AT FOOT OF MOORE STREET	(NOT READILY ACCESSIBLE FOR SAMPLING)				
BO. 9.11 C	COMBINED SEWER OUTFALL ON EAST BANK OF RIVER OPPOSITE STEVENSON CRESCENT	(NOT READILY ACCESSIBLE FOR SAMPLING)				
BO. 8.61 C	COMBINED SEWER OUTFALL ON EAST BANK OF RIVER OPPOSITE FRANCIS STREET.	110.	394	102	292	14,700,000

ALL ANALYSES EXCEPT PH REPORTED IN  
PPM UNLESS OTHERWISE INDICATED

TABLE III

DATE SAMPLED: SEPT. 10/64

MUNICIPAL STORM SEWER OUTFALLS

SAMPLE POINT NO.	SOURCE	5-DAY BOD	S O L I D S			BACTERIOLOGICAL EXAMINATION
			TOTAL	SUSP.	DISS.	M.F. COLIFORMS PER 100 ML
BO. 9.88 W	STORM SEWER OUTLET ON BANK OF BONNECHERE RIVER AT FOOT OF CAMERON AVE.		NO FLOW			
BOS. 9.62 W	STORM SEWER OUTLET ON SOUTH BANK OF SMITH'S CREEK EAST OF C.P.R. BRIDGE		NO FLOW			
BOS. 9.77 W	STORM SEWER OUTLET ON SOUTH BANK OF SMITH'S CREEK, WEST SIDE OF LISGAR AVE.		NO FLOW			
BOS. 9.79 W	STORM SEWER OUTLET ON SOUTH BANK OF SMITH'S CREEK, EAST OF LISGAR AVE.		NO FLOW			
BOS. 9.78 W	STORM SEWER OUTLET ON NORTH BANK OF SMITH'S CREEK, EAST OF LISGAR AVE.		NO FLOW			
BOS. 9.88 W	STORM SEWER OUTLET ON NORTH BANK OF SMITH'S CREEK AT FOOT OF MUNROE AVE.		NO FLOW			
BOS. 9.94 W	STORM SEWER OUTLET ON FLOOD PLAIN OF SMITH'S CREEK AT END OF CARSWELL STREET		NO FLOW			
BOS. 9.96 W	STORM SEWER OUTLET ON FLOOD PLAIN OF SMITH'S CREEK NEAR FOOT OF CARSWELL STREET	1.1	870	28	842	9,000
BOS. 10.23 W	STORM SEWER OUTLET ON NORTH BANK OF SMITH'S CREEK AT FOOT OF THOMPSON AVE.		NO FLOW			
BOS. 10.31 W	STORM SEWER OUTLET ON NORTH BANK OF SMITH'S CREEK AT FOOT OF ARNPRIOR AVE.		NO FLOW			
BOS. 10.49 W	STORM SEWER OUTFALL ON NORTH BANK OF SMITH'S CREEK AT FOOT OF PRINCE AVE.	2.6	374	198	176	34,000
BOS. 11.08 W	STORM SEWER OUTFALL TO SMITH'S CREEK AT RAGLAN ST.	2.4	1018	142	876	70,000
BOS. 11.20 W	STORM SEWER OUTFALL TO TRIBUTARY OF SMITH'S CREEK NEAR COLERAINE DRIVE	1.5	422	15	407	17,000
BO. 9.60 W	STORM SEWER OUTLET ON WEST BANK OF RIVER AT FOOT OF BALDWIN ST.		NO FLOW			
BO. 9.48 W	STORM SEWER OUTFALL TO WEST BANK OF BONNECHERE RIVER AT BRIDGE ST. 140.		522	104	418	148,000,000
BO. 9.39 W	STORM SEWER OUTLET ON EAST BANK OF RIVER AT PROJECTION OF ARGYLE STREET		NOT READILY ACCESSIBLE FOR SAMPLING			
BO. 9.34 W	STORM SEWER OUTLET ON WEST BANK OF RIVER AT RAGLAN ST. NORTH		NO FLOW			
BO. 9.33 W	STORM SEWER OUTFALL ON EAST BANK OF RIVER AT RAGLAN ST. NORTH		NO SAMPLE			

